

A NEW BRITISH "FOUR"

The Amherst Villiers Maya : 120/130 h.p. : One Thousand Hours Contemplated Between Major Overhauls

BUILT to the designs of Mr. Amherst Villiers by Villiers Hay Development, Ltd., of 48, Albemarle Street, London, W.1, the Amherst Villiers aero engine type 4-L-318 is an air-cooled, inverted four-in-line type designed to run 1,000 hours between major overhauls. It will be rated at 120 h.p. at 2,300 r.p.m. and deliver a maximum of 130 h.p. at 2,600 r.p.m. for a weight of 275 lb.

Apart from the small frontal area, the makers claim that the chief feature is the cooling of the cylinder heads and valves by the use of a hemispherical combustion chamber with widely splayed valves similar to those normally incorporated on radial engines. The barrels have deep, closely pitched fins.

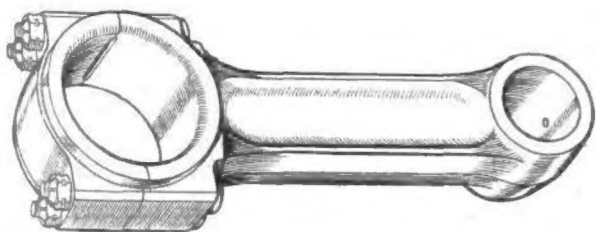
The engine has undergone weak-mixture and full-throttle tests under Air Ministry supervision and has been type-approved in the special category for flight tests. All tests were made with the assistance of Mr. Knee, of the Airwork Engine Service Department, Heston.

The cylinders are machined all over by the Mollart Engineering Co. from 55-ton carbon steel forgings supplied by Samuel Fox and Co., Ltd. It is claimed that the deep, fine-pitched

Fox and Co.'s Diamet-inspected, electrically melted nickel-chrome molybdenum steel forgings. All bearings are of large diameter and are blended with the crank cheeks by large radii. At the rear end are the separately flanged and bolted timing gear and a starter dog.

Sturdy Elektron castings (supplied by Sterling Metals, Ltd., and machined by Ryder and Davidson) are used for the crankcase. The top cover is an Elektron casting which can be easily removed in a few minutes without dismantling the rear cover or accessories.

Heat-treated aluminium alloy (R.R.53) castings by High Duty Alloys, Ltd., are used for the cylinder heads. The



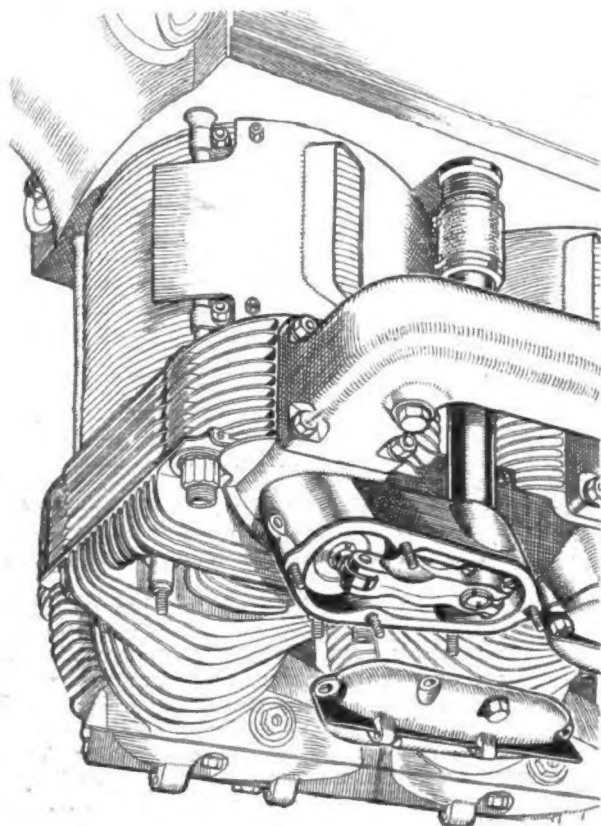
The connecting rods are of sturdy proportions and are of R.R. 56 alloy.

fin, by effecting a reduction in piston temperatures, reduce the tendency towards gummed piston rings, carbon formation, etc.

Heat-treated "Y" aluminium alloy supplied by Hepworth and Grandage, Ltd., is used for the pistons, which incorporate three Brico compression and two scraper rings of the butt-joint type. The fully floating gudgeon pins are of large diameter.

The connecting-rods are of light alloy (R.R.56) and of heavy section. They are hot-pressed by High Duty Alloys, Ltd. Four bolts at the big-end clamp the steel shells lined with Glacier white metal.

The crankshaft is integral with the airscrew hub and has five precision-ground main bearings with a deep-groove Hoffman ball journal bearing to take the airscrew thrust. It is machined all over by Ambrose Shardlow, Ltd., from Samuel



The somewhat unorthodox cylinder heads and valve gear are visible in this sketch made from the intake side. Note how the push rods are placed between the cylinders.